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**ENVIRONMENTAL ASSESSMENT,
FINDING OF NO SIGNIFICANT IMPACT,
AND DECISION**

**FERAL SWINE DAMAGE MANAGEMENT BY THE
OKLAHOMA WILDLIFE SERVICES PROGRAM**

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1.0 CHAPTER 1: PURPOSE OF AND NEED FOR ACTION

1.1 Introduction

USDA/APHIS/Wildlife Services (WS) is authorized by Congress to manage a program to reduce human/wildlife conflicts. WS's mission is to "provide leadership in wildlife damage management in the protection of America's agricultural, industrial and natural resources, and to safeguard public health and safety" (USDA 1989). This is accomplished through:

- A) training of wildlife damage management professionals;
- B) development and improvement of strategies to reduce economic losses and threats to humans from wildlife;
- C) collection, evaluation, and dissemination of management information;
- D) cooperative wildlife damage management programs;
- E) informing and educating the public on how to reduce wildlife damage; and
- F) providing data and a source for limited-use management materials and equipment, including pesticides.

This Environmental Assessment (EA) evaluates a portion of this responsibility, specifically the management of feral swine damage in Oklahoma.

WS is a cooperatively funded and service oriented program. Before any operational wildlife damage management is conducted, Agreements for Control or WS Work Plans must be signed by WS and the land owner/administrator. WS cooperates with private property owners and managers and with appropriate land and wildlife management agencies, as requested, with the goal of effectively and efficiently resolving wildlife damage problems in compliance with all applicable federal, state, and local laws.

Individual actions on the types of sites encompassed by this analysis are normally categorically excluded under the APHIS Implementing Regulations for compliance with the National Environmental Policy Act (NEPA) as described in the Code of Federal Regulations (CFR) 7, 372.5(c). APHIS Implementing Regulations also provide that all technical assistance furnished by WS is categorically excluded (7 CFR 372.5(c) and 60 Federal Register 6,000, 6,003). Oklahoma WS has prepared this EA to assist in planning feral swine damage management (FSDM) activities and to clearly communicate with the public the analysis of cumulative impacts for a number of issues of concern in relation to alternative means of meeting needs for such management in the State. This analysis covers WS's plans for current and future FSDM actions wherever they might be requested within Oklahoma.

1.2 Purpose

The purpose of this EA is to analyze the effects of WS activities in Oklahoma to manage damage caused by feral swine. The feral swine population has increased significantly in Oklahoma since the late 1980s. Swine numbers have continued to escalate, increasing the need for WS assistance to individuals experiencing swine damage problems or damage is

threatened by feral swine populations in the vicinity of their property. Feral swine cause considerable damage to agricultural crops, pastures, stored feed and other resources. Swine directly compete with many valuable native wildlife species and decrease habitat quality. In some cases they may predate directly on livestock and wildlife species, or can pass diseases to them, especially considering that they are vectors of swine brucellosis, pseudorabies, leptospirosis and other diseases. Swine may pose a threat to human health and safety from disease, and automobile and aircraft accidents. These damages, mostly to private landowners in Oklahoma, drive the need for action.

1.2.1 Summary of Proposed Action

The proposed action is to continue the current portion of the WS program that responds to requests for FSDM, and in response to the increasing population and distribution of feral swine in Oklahoma, prepare for increased conflicts with them. To meet these goals, WS would have the objective of responding to all requests for assistance with, at a minimum, technical assistance or self-help advice, or, where appropriate and cooperative or congressional funding is available, direct control assistance in which professional WS personnel conduct FSDM. An Integrated Wildlife Damage Management (IWDM) approach would be implemented which allows the use of all legal techniques and methods, used singly or in combination, to meet each requestor's need for resolving conflicts with feral swine. Agricultural producers and others requesting assistance would be provided with information regarding the use of effective nonlethal and lethal techniques. Lethal methods used by WS would include shooting, aerial hunting, trapping, snaring, or euthanasia following live capture in cage traps. Nonlethal methods used by WS may include propane exploders, fencing, other barriers, and deterrents. In many situations, the implementation of nonlethal methods such as fencing would be the responsibility of the requestor to implement. FSDM by WS would be allowed in the State, when requested, on private or public lands where a need has been documented, upon completion of an Agreement for Control. All management actions would comply with appropriate federal, state, and local laws.

1.3 Need For Action

The need for action is based on the escalating damage caused by feral swine in Oklahoma. Their population has increased considerably in the last two decades, and WS has continued to receive increased numbers of calls annually regarding FSDM.

1.3.1 Need for FSDM to Protect Agricultural Resources

Feral swine are responsible for large scale destruction of crops, hay meadows, and pasture primarily by rooting and wallowing. Rooting is a common activity and is done year-round in search of food (Stevens 1996). The feral hog's rooting and wallowing activities damage pastures and hay meadows, spoil watering holes and can severely damage riparian habitats. From FY96 (Fiscal Year 1996 – October 1, 1995 to September 30, 1996) to FY03, WS Specialists in Oklahoma received

requests for assistance involving over \$166,000.00 in damages to pastures and rangeland alone (OK MIS¹). In addition to damage to pasture and seed crops, soil upheaval can lead to soil loss through leaching and erosion. Feral swine activity in and around stock watering facilities can lead to degradation of the area and tainting of the water. Wallowing activities in stock ponds can result in severely muddied water, algal blooms, oxygen depletion, bank erosion, soured water and reduction in fish viability (Beach 1993). Feral hogs also cause damage to field crops. Damages to crops result both from feeding and feeding related activities (i.e., trampling and rooting). A large percentage of the losses are in addition to that loss resulting from the resource being eaten (Beach 1993). In Oklahoma, damages to several field crops have been documented including damage to corn, wheat, soybeans, peanuts, watermelons, alfalfa, milo, and sorghum. From FY96 to FY03, Oklahoma WS documented approximately \$194,000.00 in damages to field crops. The value of damage accounts for only those incidents where WS assistance was requested in dealing with feral swine conflicts. This does not represent all damage that occurs in Oklahoma.

Livestock, another important agricultural resource in Oklahoma, can also be impacted by feral swine. Of greatest concern is disease transmission to swine production facilities such as swine brucellosis, pseudorabies, and brucellosis. Feral swine are potential reservoirs for several diseases and parasites that threaten livestock. A study (Corn et al, 1986) conducted in Texas found that feral swine do represent a reservoir of diseases. Swine harvested in this study tested positive for pseudorabies, brucellosis, and leptospirosis. Other diseases carried by feral swine include hog cholera, tuberculosis, bubonic plague, and anthrax (Beach 1993). A recent study in Oklahoma (Saliki et al. 1998) found samples also positive for antibodies against porcine parvovirus, swine influenza and the recently emerged porcine reproductive and respiratory syndrome virus (PRRS). PRRS is a highly infectious virus, requiring only a few viral particles to initiate infection (Henry 2003). Oklahoma's inventory of all domestic swine in March 2004 was estimated at 2,350,000 (OASS 2004). Although the size of the Oklahoma feral swine population is unknown, possibilities of contacts between feral and domestic swine exist. In addition to large-scale commercial operations, Oklahoma has a large number of small-scale "backyard" swine operations that could potentially come in contact with feral swine (Saliki et al. 1998). With Oklahoma's large number of domestic swine, the potential exists for significant economic losses as a result of a two-way transmission of infectious diseases between feral and domestic swine. A recent outbreak of PRRS in a northern Oklahoma domestic swine operation created losses, associated with high rates of illness and high mortality in both adult swine and neonates, of nearly 15,000 pigs and financial losses in excess of \$500,000.00.

¹ MIS - Computer-based Management Information System used for tracking WS FSDM activities. The current MIS system has been operational since FY 92 and other methods were in place to track data prior to that. Throughout the text, MIS will be noted along with the year, ie. FY03, when the data was entered. MIS reports will not be referenced in the Literature Cited Section because MIS reports are not kept on file, nor furthermore in the text. A database is kept that allows queries to be made to retrieve the information needed.

Feral swine can be efficient predators. Calves, kids, lambs, and poultry have been known to become prey of feral swine (Stevens 1996). The young are generally most vulnerable, but adult animals that are weakened or injured are also preyed upon. Losses to livestock reported to or verified by WS in Oklahoma totaled \$9,500.00 from FY95 to FY03; these numbers only represent losses from agricultural producers requesting assistance from WS. Since feral swine so thoroughly consume young prey, there is often little evidence remaining to suggest that a birthing and subsequent predation has occurred. If a landowner is not alert to the possibility of feral swine predation, it is easy to overlook this as a cause for low production. Frequently, even when predation is considered, feral swine often escape suspicion because people generally underestimate their capabilities as a predator (Beach 1993).

In many parts of Oklahoma, ranchers rely on riparian habitat to provide shade and watering areas for their livestock. Riparian habitat can be destroyed by the rooting and wallowing behavior exhibited by feral swine. This is particularly true when drought conditions concentrate large numbers of feral swine into limited riparian areas (Beach 1993).

1.3.2 Need for FSDM to Protect Natural Resources

Feral swine can compete with and predate native wildlife and severely damage a variety of habitats. Competition with and predation of native wildlife is a concern often reported to WS field specialists assisting landowners with wildlife conflicts. Feral swine are omnivorous and feed on a wide variety of items, many of which are staples for native fauna. One of the more important seasonal food resources used by feral swine is wild fruit and nut crops, especially oak mast (Wood and Roark 1980). Oak mast is also an important food source for deer and wild turkey. When feral swine actively compete for mast, resident deer and wild turkey may enter the winter with inadequate fat reserves, thus threatening the viability of these native wildlife species (Beach 1993). Feral swine also predate native wildlife, especially young and injured wildlife, and ground nesting birds, their nestlings and eggs (Beach 1993). Finally, feral swine can be very damaging to different habitats, especially wetlands. Their rooting and foraging can completely destroy the understory in forests and make trees less stable during windstorms. Their wallowing and foraging can significantly damage wetlands, which may be important for threatened and endangered (T&E), and sensitive species such as fish.

1.3.3 Need for FSDM to Protect Property

Feral swine can severely damage a variety of property. Lawns, landscaping, and gardens can literally be destroyed by a herd of feral swine, causing thousands of dollars in damage. Golf course managers frequently complain of feral swine damaging fairways and greens. Suburban communities, where feral swine exist, often have landscaping completely destroyed by feral swine foraging, costing thousands of dollars to repair. Another problem is the potential for larger swine to

cause collisions with vehicles and aircraft. Like deer and other large game species which cross highways, feral swine often cause damage to automobiles (Miller 1993). Data obtained through the Oklahoma Department of Public Safety (ODPS) shows that animal involved vehicular crashes totaled 3,576 crashes in a two year period. This results in tens of thousands of dollars annually in vehicle damage. Damage is typically greatest in areas where populations are dense. Finally, where feral swine have access to runways, they can cause considerable damage to aircraft. Deer cause the greatest amount of damage to the aviation industry nationwide and this damage amounts to hundreds of millions of dollars annually. Feral swine are larger and could cause considerably more damage.

1.3.4 Need for FSDM to Protect Human Health and Safety

Feral swine can be a threat to human health and safety from disease and in vehicle accidents. Feral swine are potential reservoirs for several diseases and parasites that threaten people. Most of these also affect livestock and were discussed above. Also as discussed above, feral swine could injure or kill persons in accidents with them. Of the 3,576 automobile accidents in 2001-2002 discussed above, ten people were killed and 493 injured as a result (ODPS 2004). As feral swine populations continue to increase in numbers and geographical distribution, more incidents of vehicular encounters can be expected.

1.4 Relationship of This Environmental Assessment To Other Environmental Documents

WS has issued a Final Environmental Impact Statement (FEIS) on the national APHIS/WS program (USDA 1997). This EA is tiered to the FEIS and pertinent information available in the FEIS has been incorporated by reference into this EA.

1.5 Decisions To Be Made

Based on the scope of this EA, the decisions to be made are:

- Should FSDM as currently implemented by WS be continued in Oklahoma?
- If not, how should WS fulfill its legislative responsibilities for managing feral swine damage in the State?
- What mitigation measures should be implemented to reduce any identified risks?
- Might the continuing of WS's current program of FSDM have significant impacts requiring preparation of an EIS?

1.6 Scope of This Environmental Assessment Analysis

1.6.1 Actions Analyzed

This EA evaluates the effects of WS FSDM activities in Oklahoma on the human environment. FSDM is conducted to protect agricultural and natural resources, property, and human health and safety.

1.6.2 Native American Lands and Tribes

Tribes have not requested WS to provide assistance with FSDM in Oklahoma for the protection of resources on Tribal lands. If a Tribe contacted WS for assistance, the methods employed and potential impacts would be the same as for any private land upon which WS could provide service.

1.6.3 Federal Lands

WS provides FSDM on federal lands in Oklahoma including the U.S. Forest Service, Department of Defense, and others. If WS were requested to conduct FSDM on federal lands for the protection of private resources, this EA would cover the actions implemented. However, if the request is to protect federal resources, the requesting federal agencies are responsible for NEPA documentation. This EA would cover such actions, though, if the requesting federal agency determined that this EA had an adequate analysis to cover the actions to be implemented and they adopted it in their own Decision Record. Actions taken on federal lands are included in the analysis in this EA.

1.6.4 Period for Which this EA is Valid

This EA will remain valid until WS determines that new needs for action or new alternatives having different environmental effects must be analyzed. At that time, this analysis and document will be reviewed and revised as necessary. This EA will be reviewed annually to ensure that FSDM activities are still within the scope of analyses in this EA.

1.6.5 Site Specificity

This EA analyzes potential impacts of WS FSDM activities that will occur or could occur on private and public lands in Oklahoma. Because the proposed action is to continue the current program, and because the current program's goal and responsibility is to provide service when requested within the constraints of available funding and personnel, it is conceivable that FSDM activity by WS could occur anywhere in the State. However, the location of every FSDM need that will occur and result in a request for assistance to WS cannot be predicted. Planning for the management of feral swine damage must be viewed as being conceptually similar to federal or other agency actions whose missions are to stop or prevent

adverse consequences from anticipated future events for which the actual sites and locations where they will occur are unknown but could be anywhere in a defined geographic area. Examples of such agencies and programs include fire and police departments, emergency clean-up organizations, and insurance companies. Although some of the sites where feral swine damage problems will occur can be predicted, all specific locations or times where such problems will occur cannot, especially considering the rapid expansion of this invasive species in Oklahoma. Thus, this EA analyzes the potential impacts of FSDM efforts in Oklahoma wherever and whenever they might occur, or may in the near future, as part of the current program. This EA emphasizes significant issues as they relate to specific areas whenever possible. However, the issues that pertain to the various types of feral swine damage and resulting management are the same, for the most part, wherever they occur, and are treated as such. The standard WS Decision Model (Slate et al. 1992) and WS Directive 2.105 is the routine undocumented thought process that is the site-specific procedure for determining methods and strategies to use or recommend for individual actions conducted by WS in the State (See USDA 1997, Chapter 2 and Appendix N). Decisions made using this thought process will be in accordance with standard operating procedures described herein and adopted or established as part of the decision.

1.6.6 Interdisciplinary Development of the EA

Comments were solicited from the Oklahoma Department of Wildlife Conservation (ODWC), the Oklahoma Department of Agriculture, Food and Forestry (ODAFF), the Oklahoma State Department of Health (OSDH), and the United States Fish and Wildlife Service (USFWS). Comments are maintained in an administrative file located at the WS State Office, 2800 N. Lincoln Blvd., Oklahoma City, Oklahoma 73105.

1.7 Authority and Compliance

1.7.1 Authority of Federal and State Agencies in FSDM in Oklahoma

WS has legislative authority to conduct wildlife damage management under USDA. USDA is directed by law and mandated by Congress to protect American agriculture and other resources from damage associated with wildlife. The primary statutory authority for USDA is the Act of March 2, 1931 (7 U.S.C. 426-426c; 46 Stat. 1468), as amended in the Fiscal Year 2001 Agriculture Appropriations Bill, which provides that:

"The Secretary of Agriculture may conduct a program of wildlife services with respect to injurious animal species and take any action the Secretary considers necessary in conducting the program. The Secretary shall administer the program in a manner consistent with all of the wildlife services authorities in effect on the day before the date of the enactment of

the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2001."

In Oklahoma, WS, in accordance with the provisions of Title 29, O.S.2001, §5-201, and 5-502, is authorized and permitted to take necessary action in assisting any landowner in the management and control of ... other wildlife species on their property.

ODWC is authorized by Title 29, O.S.2001, §3-103, Part 9, to "Prescribe the manner of cooperation with....any agency of the Federal government....any other agency or organization in the study of conservation and propagation of Wildlife..."

ODAFF is authorized by Title 2, O.S.2001, §12-1, A, to enter into cooperative agreements for the purpose of "...conducting wildlife damage management for...other wildlife species causing destruction to livestock, poultry, crops, range land, forests and other resources, including human health and safety". It further states that "Wildlife damage management of ...other wildlife species causing damage shall include but not be limited to hunting, trapping, or other practical methods for the control of wildlife damage."

OSDH has the authority to enter into an agreement with WS for conducting wildlife damage management for the protection of human health from wildlife threats.

USFWS has statutory authority to manage Federally listed T&E species through the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531-1543, 87 Stat. 884), as amended. WS, under Section 7 of ESA, must consult with USFWS to ensure that federal activities do not impact T&E species or critical habitat.

1.7.2 Compliance With Federal Laws

Several federal laws regulate or, otherwise, affect WS FSDM activities. WS complies with these laws, and consults and cooperates with other agencies as appropriate.

1.7.2.1 National Environmental Policy Act (NEPA)

WS prepares analyses of the environmental impacts of program activities to meet procedural requirements of this law. This EA meets the NEPA requirement for the proposed action in Oklahoma. When WS operational assistance is requested by another federal agency, NEPA compliance is the responsibility of the other federal agency.

1.7.2.2 Endangered Species Act (ESA)

It is federal policy, under the ESA, that all federal agencies shall seek to conserve T&E species and shall utilize their authorities in furtherance of the purposes of the Act (Sec.2(c)). WS conducts Section 7 consultations with USFWS to ensure that "any action authorized, funded or carried out by such an agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species . . . Each agency shall use the best scientific and commercial data available" (Sec.7(a)(2)). WS obtained a Biological Opinion (B.O.) from USFWS in 1992 describing potential effects on T&E species and prescribing reasonable and prudent measures for avoiding jeopardy (USDA 1997, Appendix F). WS at the programmatic level initiated a new consultation with USFWS to reevaluate the 1992 B.O. and to fully evaluate potential effects on T&E species listed or proposed for listing since the 1992 FWS B.O. In 1999, Oklahoma WS entered into an informal consultation with the USFWS to address T&E species impacts from wildlife damage management activities specifically in Oklahoma.

1.7.2.3 National Historic Preservation Act (NHPA) of 1966 as amended

The National Historic Preservation Act (NHPA) of 1966, and its implementing regulations (36 CFR 800), requires federal agencies to: 1) determine whether activities they propose constitute "undertakings" that can result in changes in the character or use of historic properties and, 2) if so, to evaluate the effects of such undertakings on such historic resources and consult with the State Historic Preservation Office regarding the value and management of specific cultural, archaeological and historic resources, and 3) consult with appropriate American Indian Tribes to determine whether they have concerns for traditional cultural properties in areas of these federal undertakings. WS actions on Tribal lands are only conducted at the Tribe's request and under signed agreement; thus, the Tribes have control over any potential conflict with cultural resources on its properties. WS activities as described under the proposed action do not cause ground disturbances nor do they otherwise have the potential to significantly affect visual, audible, or atmospheric elements of historic properties and are thus not undertakings as defined by the NHPA. FSDM could benefit historic properties if such properties were being damaged by feral swine. In those cases, the officials responsible for management of such properties would make the request and would have decision-making authority over the methods to be used. Harassment techniques that involve noise-making could conceivably disturb users of historic properties if they were used at or in close proximity to such properties; however, it would be an exceedingly rare event for noise-producing devices to be used in close proximity to such a property unless the resource being protected from feral swine damage was the property itself, in which case the primary effect would be beneficial. Also, the use of such devices is generally short term and could be discontinued if any conflicts with

historic properties arose. WS has determined FSDM actions are not undertakings as defined by the NHPA because such actions do not have the potential to result in changes in the character or use of historic properties. A copy of this EA is being provided to each American Indian Tribe in the State to allow them opportunity to express any concerns that might need to be addressed prior to a decision.

1.7.2.4 Executive Order 13112 of February 3, 1999, Invasive Species

Nonnative plants and animals that inadvertently find their way to the U.S. are of increasing concern as they threaten our natural resources. One study estimates that the total costs of invasive species in the United States amount to more than \$138 billion each year (Pimentel et. al., 1999). Invasive species impact nearly half of the currently listed T&E species under ESA.

On February 3, 1999, Executive Order 13112 was signed establishing the National Invasive Species Council (Council). The Council is an inter-Departmental body that helps to coordinate and ensure complementary, cost-effective Federal activities regarding invasive species. Council members include the Departments of the Interior, Agriculture, Commerce, State, Treasury, Transportation, Defense, and Health and Human Services, and the Environmental Protection Agency, and the U.S. Agency for International Development. Together with the Invasive Species Advisory Committee, stakeholders, concerned members of the public, and member departments, the Council formulated an action plan for the nation. The Council issued the National Invasive Species Management Plan early in 2001 to provide an overall blueprint for Federal action. The Plan recommends specific action items to improve coordination, prevention, control and management of invasive species by the Federal agency members of the Council.

1.7.2.5 Executive Order 12898 - "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."

Environmental justice is a movement promoting the fair treatment of people of all races, income levels and cultures with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Environmental justice, also known as environmental equity, has been defined as the pursuit of equal justice and equal protection under the law for all environmental statutes and regulations without discrimination based on race, ethnicity, or socioeconomic status.

Environmental justice is a priority both within APHIS and WS. Executive Order 12898 requires Federal agencies to make environmental justice part of their mission, and to identify and address disproportionately high and adverse human health and environmental effects of Federal programs, policies and activities on minority and low-income persons or populations. APHIS plans

to implement Executive Order 12898 principally through its compliance with the provisions of NEPA.

All WS activities are evaluated for their impact on the human environment and compliance with Executive Order 12898 to insure environmental justice. WS personnel use wildlife damage management methods as selectively and environmentally conscientious as possible. It is not anticipated that the proposed action would result in any adverse or disproportionate environmental impacts to minority and low-income persons or populations.

1.7.2.6 Executive Order 13045 - "Protection of Children from Environmental Health and Safety Risks."

Children may suffer disproportionately from environmental health and safety risks for many reasons, including their development, and physical and mental status. Because WS makes it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children, WS has considered the impacts that this proposal might have on children. The proposed management plan would occur by using only legally available and approved methods where it is highly unlikely that children would be adversely affected. For these reasons, WS concludes that it would not create an environmental health or safety risk to children from implementing this proposed action.

1.7.3 State and Local Laws

Feral swine are mostly regulated by state and local laws because they are resident animals. Current Oklahoma law regards feral swine as invasive species and can be hunted on public lands. However, where feral swine are on private lands, they are considered estray animals until the Sheriff has declared them feral. The Sheriff of a County puts out public notice for 5 days to determine if someone claims ownership. If no one comes forward, the Sheriff can declare the swine feral and they can be captured or killed.

In 2000, Title 4 of the Oklahoma Statutes as paraphrased above was revised with the following:

- 1) Domestic animals include, but are not limited to, cattle, bison, hogs, sheep, goats, equidae, chickens or other poultry and exotic livestock. The term "domestic animals" should not include dogs, cats and feral hogs.
- 2) "Feral hog" means any hogs (*Sus scrofa*), including, but not limited to, Russian and European wild boar which are running at large upon public lands or upon private lands in this state whose owner is unknown in the vicinity of the premises where such feral hogs are found. If the owner of a stray hog is known, a hog running at large upon public lands or upon private lands in this state shall not be considered feral until five (5) calendar days after escaping from domestic

confinement. If notice is provided to adjacent landowners within five (5) calendar days, the hog shall not be considered feral for an additional ten (10) calendar days.

3) Any person may take and kill feral hogs provided that:

- a) Feral hogs taken on public property during any established hunting season must be taken with weapons and methods authorized by the Department of Wildlife Conservation for that hunting season;
- b) Feral hogs may be taken on any land where the hunter has legal access unless prohibited by the landowner pursuant to the Oklahoma Wildlife Code; and
- c) No person whose hunting license is revoked may take or kill feral hogs during the period of the revocation.

4) A person may not willfully omit to keep domestic animal in a suitable closure, allow an animal to run at large or to be unrestrained without notice, or knowingly allow a domestic animal to escape confinement. No person shall willfully release any hog to live in a wild or feral state upon public land or upon private land.

5) Violations of these laws are deemed as a misdemeanor and subject to be fined no more than \$500.

1.8 A Preview of the Remaining Chapters In This EA

This EA is composed of 5 chapters. Chapter 2 discusses and analyzes the issues and affected environment. Chapter 3 contains a description of each alternative, alternatives not considered in detail, and mitigation measures. Chapter 4 analyzes the environmental impacts associated with each alternative considered in detail for each of the issues. Chapter 5 contains the list of preparers of this EA, persons consulted, and literature cited.

2.0 CHAPTER 2: DISCUSSION OF ISSUES

Chapter 2 contains a discussion of the issues, including issues that will receive detailed environmental impact analysis in Chapter 4 (Environmental Consequences), issues that have driven the development of standard operating procedures, and issues that will not be considered in detail, with rationale. The affected environments will be incorporated into the discussion of the environmental impacts in Chapter 4.

2.1 Issues

The following issues have been identified as areas of concern requiring consideration in this EA. These will be analyzed in detail in Chapter 4:

- Effects of FSDM on Feral Swine Populations
- Effects of FSDM on Nontarget Species Populations, including T&E Species
- Effects of FSDM on Human Health and Safety
- Humaneness of FSDM Methods Used in FSDM

2.2 Issues Addressed in the Analysis of Alternatives

2.2.1 Effects on Feral Swine Populations

A common concern among members of the public is whether wildlife damage management actions adversely affect the viability of target species populations. The effect of damage management actions on feral swine populations will be analyzed in this EA. However, it must be noted that feral swine are considered an invasive species in Oklahoma, and as such, extirpation may be a desired goal for their population. This is likely unfeasible at this point.

2.2.2 Effects on Nontarget Species Populations, Including T&E Species

A common concern among members of the public and wildlife professionals, including WS personnel, is the potential impacts of damage control methods and activities on nontarget species, particularly T&E species. WS's standard operating procedures include measures intended to mitigate or reduce the effects on nontarget species populations and are presented in Chapter 3.

Special efforts are made to avoid jeopardizing T&E species through biological evaluations of the potential effects and the establishment of special restrictions or mitigation measures. WS has programmatically consulted with the USFWS under Section 7 of the Endangered Species Act (ESA) concerning potential impacts of WDM methods on T&E species and has obtained a Biological Opinion (USDA 1997, Appendix F). In 1999, Oklahoma WS entered into an informal consultation with the USFWS to address T&E species in Oklahoma (Table 1) not covered in the Biological Opinion to assure that potential effects on T&E species have been

adequately addressed and that any potential impacts could be avoided with the appropriate mitigation measures in place.

In contrast to adverse impacts on nontarget animals from direct take of feral swine through FSDM methods, some nontarget species may actually benefit from FSDM. Prime examples are the benefit to ground nesting bird species such as the lesser prairie-chicken that results from any reduction in nest destruction or predation from feral swine activity, or the reduction of impacts to wetlands from feral swine wallowing where fish species are present. However, even though these species could benefit, they would likely only truly benefit from FSDM directed to protect them where feral swine were considered a direct threat to them.

Table 1. Oklahoma Federally listed threatened and endangered species.

SPECIES	SCIENTIFIC NAME	Status	Locale	Habitat	FS Method	FS Removal
MAMMALS						
Bat, gray	<i>Myotis grisescens</i>	E	Northeast	CF	0	0
Bat, Indiana	<i>Myotis sodalis</i>	E	East	CF	0	0
Bat, Ozark big-eared	<i>Corynorhinus townsendii ingens</i>	E	Northeast	CF	0	0
BIRDS						
Crane, whooping	<i>Grus americana</i>	E,H	All	GW	0	0
Curlew, Eskimo	<i>Numenius borealis</i>	E	All	GW	0	0
Eagle, bald	<i>Haliaeetus leucocephalus</i>	T	All	GL	0	0
Plover, piping	<i>Charadrius melodus</i>	T	All	LW	0	+
Prairie-chicken, lesser	<i>Tympanuchus pallidicinctus</i>	C	Southwest	G	0	+
Tern, Interior least	<i>Sterna antillarum</i>	E	All	LW	0	+
Vireo, black-capped	<i>Vireo atricapillus</i>	E	Central	FG	0	+
Woodpecker, red-cockaded	<i>Picoides borealis</i>	E	Southeast	F	0	0
FISHES						
Cavefish, Ozark	<i>Amblyopsis rosae</i>	T	Northeast	C	0	0
Darter, Arkansas	<i>Etheostoma cragini</i>	C	North	LW	0	+
Darter, leopard	<i>Percina pantherina</i>	T,H	Southeast	W	0	+
Madtom, Neosho	<i>Noturus placidus</i>	T	Northeast	W	0	+
Shiner, Arkansas River	<i>Notropis girardi</i>	T,H	West	LW	0	+
INVERTEBRATES						
Beetle, American burying	<i>Nicrophorus americanus</i>	E	East	FG	0	+
Mucket, Neosho	<i>Lampsilis rafinesqueana</i>	C	Northeast	LW	0	+
Mussel, scaleshell	<i>Arkansia wheeleri</i>	E	Southeast	W	0	+
Pocketbook, Ouachita rock	<i>Leptodea leptodon</i>	E	Southeast	LW	0	+
PLANTS						
Orchid, Western prairie fringed	<i>Platanthera praeclara</i>	T	Northeast	W	0	+

STATUS

E - Endangered

T - Threatened

C - Candidate

H - Design. Crit. Hab.

* - Believed extirpated

HABITAT

C - Caves

F - Forests/riparian borders

G - Grassland/range/meadow

L - Lakes, Rivers

W - Wetland/marsh/creek

FSDM - Impacts

(-) - Negative

0 - none

(+) - Positive

2.2.3 Effects on Human Health and Safety

Some FSDM methods, and in particular the use of firearms and aerial hunting by WS personnel, could pose a threat or cause injuries to people. WS personnel routinely use firearms and aircraft to remove feral swine in damage situations. WS policy requires standard procedures for training, safe use, storage and transportation of firearms as prescribed by the WS Firearms Safety Training Manual (WS

Directive 2.615, 05/03/02). The required firearms training is conducted each year by certified instructors. Hands-on firearms proficiency is evaluated in the field and candidates must pass a written exam. Therefore, firearms are handled in a safe manner with consideration given to the proper firearm to be utilized, the target density, backstop and unique field conditions. The use of aircraft by WS, which under the alternatives proposed, include the use of helicopter or single engine fixed wing aircraft for the purposes of aerial survey, capture or aerial hunting. Aerial hunting has been utilized to some degree in Oklahoma since 1944. There have been no WS aerial accidents in Oklahoma involving crash or injury since aerial hunting began in 1944 (J. Steuber pers comm.).

The following information was obtained from Mr. Norm Wiemeyer, Chief, Denver Field Office of the National Transportation Safety Board (NTSB, the agency that investigates aviation accidents) regarding potential aviation-related environmental concerns:

Major Ground or Forest Fires: Mr. Wiemeyer stated he had no recollection of any major fires caused by government aircraft since he has been in his position beginning in 1987. In addition, there are no reports of fires caused by WS aircraft in Idaho or any other state. The period of greatest fire danger typically occurs during the summer months, but WS ordinarily conducts few, if any, aerial hunting operations during the summer months.

Fuel Spills and Environmental Hazard from Aviation Accidents: The NTSB stated that aviation fuel is extremely volatile and will evaporate within a few hours or less to the point that even its odor cannot be detected (N. Wiemeyer, NTSB, to G. Littauer pers. comm. 2000). Jet A fuel also does not pose a large environmental problem if spilled. This is because a straight chained hydrocarbon with little benzene present and microbes would quickly break-down any spill by aerobic action. The quantities potentially involved in aircraft used by WS are relatively small (52 gallon maximum in a fixed-wing aircraft and 91 gallon maximum in the helicopters used by WS) and less than many vehicles traveling state highways. In addition, during much of each flight the amount of fuel on board would be considerably less than these maximum amounts. In some cases, not all of the fuel would be spilled.

Oil and Other Fluid Spills: For privately-owned aircraft, the aircraft owner or his/her insurance company is responsible for cleanup of spilled oils and other fluids if required by the owner or manager of the property on which the accident occurred. In the case of BLM, Forest Service and National Park Service lands, the land managing agency generally requires soil to be decontaminated or removed and properly disposed. With the size of aircraft used by WS, the quantities of oil (6-8 quarts maximum for reciprocating engines) capable of being spilled in any accident are small and insignificant with respect to the potential for environmental damage. Aircraft used by WS are single engine models, so the greatest potential amount of oil that could be spilled in one

accident would be about 8 quarts.

Petroleum products biodegrade through volatilization and bacterial action, particularly when exposed to oxygen (EPA 2000). Thus, small quantity oil spills on surface soils can be expected to biodegrade readily. Even in subsurface contamination situations involving underground storage facilities which would generally be expected to involve larger quantities than would ever be involved in a small aircraft accident, EPA guidelines provide for "natural attenuation" or volatilization and biodegradation in some situations to mitigate environmental hazards (EPA 2000). Thus, even where oil spills in small aircraft accidents are not cleaned up, the oil does not persist in the environment or persists in such small quantities that there is no problem. Also, WS' accidents generally would occur in remote areas away from human habitation and drinking water supplies. Thus, the risk to drinking water appears to be exceedingly low or nonexistent.

Based on a thorough Risk Assessment, APHIS concluded that, the use of aerial hunting is selective to target individuals or populations, and such use has negligible impacts on the environment (USDA 1997).

On the other hand, feral swine are known reservoirs for several diseases transmittable to humans and do pose a threat to people. Their rapidly expanding population also represents a threat to motorists and airplane passengers. These threats will likely increase as the population increases. Population increases and geographic distribution of feral swine will be discussed further in Chapter 4.

2.2.4 Humaneness and Animal Welfare Concerns of Methods Used by WS

The issue of humaneness and animal welfare, as it relates to the killing or capturing of wildlife is an important but very complex concept that can be interpreted in a variety of ways. Schmidt (1989) indicated that vertebrate pest damage management for societal benefits could be compatible with animal welfare concerns, if "... the reduction of pain, suffering, and unnecessary death is incorporated in the decision making process."

Suffering is described as a "... highly unpleasant emotional response usually associated with pain and distress." However, suffering "... can occur without pain ...," and "... pain can occur without suffering ..." (AVMA 1987). Because suffering carries with it the implication of a time frame, a case could be made for "... little or no suffering where death comes immediately ..." (CDFG 1991), such as shooting.

Defining pain as a component in humaneness of WS methods appears to be a greater challenge than that of suffering. Pain obviously occurs in animals. Altered physiology and behavior can be indicators of pain, and identifying the causes that elicit pain responses in humans would "... probably be causes for pain in other

animals . . . " (AVMA 1987). However, pain experienced by individual animals probably ranges from little or no pain to significant pain (CDFG 1991).

Pain and suffering, as it relates to WS damage management methods, has both a professional and lay point of arbitration. Wildlife managers and the public would be better served to recognize the complexity of defining suffering, since " . . . neither medical or veterinary curricula explicitly address suffering or its relief" (CDFG 1991).

Therefore, humaneness, in part, appears to be a person's perception of harm or pain inflicted on an animal, and people may perceive the humaneness of an action differently. The challenge in coping with this issue is how to achieve the least amount of animal suffering within the constraints imposed by current technology and funding.

WS has improved the selectivity and humaneness of management techniques through research and development. Research is continuing to bring new findings and products into practical use. Until new findings and products are found practical, a certain amount of animal suffering could occur when some FSDM methods are used in situations where nonlethal damage management methods are not practical or effective.

WS personnel are experienced, trained and professional in their use of management methods, in order to be as humane as possible under the constraints of current technology, workforce and funding.

2.3 Issues Considered But Not In Detail With Rationale

2.3.1 Appropriateness of Preparing an EA and not an EIS for Such a Large Area

Some individuals might question whether preparing an EA for an area as large as Oklahoma would meet the NEPA requirements for site specificity. Comparatively, FSDM is currently a minor component of the Oklahoma WS program, though it may expand greatly should funding become available because the problem has increased exponentially in the last decade.

WS' mission is to manage damage caused by wildlife, not overall wildlife populations. As an agency that exists to manage specific types of damage, WS can predict the types of locations or situations where damage is likely to occur. However, due to any number of variable circumstances, WS has no absolute control over when a request for FSDM assistance will be received nor can WS predict specific, individual times and locations of most feral swine damage situations. Therefore, WS must be ready and able to provide assistance on short notice. The missions of other Federal and state wildlife management agencies generally concentrate on management for wildlife abundance and are not equipped or prepared to prevent feral swine damage problems without resorting to extreme and extensive

population management strategies that, in most cases, would neither be prudent nor affordable. Given the feral swine population, the increase in requests for assistance and program activity monitoring, WS believes this EA addresses most potential needs at any given location.

If a determination is made through this EA that the proposed action would have a significant environmental impact, then an EIS would be prepared. In terms of considering cumulative impacts, one EA analyzing impacts for the entire State provides a better analysis than multiple EA's covering smaller zones.

2.3.2 WS's Impact on Biodiversity

The WS program does not attempt to eradicate any species of wildlife in Oklahoma. WS operates in accordance with international, federal and state laws, and regulations enacted to ensure species viability. Impacts on target and nontarget species populations because of WS's lethal FSDM activities are minor as will be shown in section 4.1. The impacts of the current WS program on biodiversity are not significant nationwide or statewide (USDA 1997). In the case of local feral swine populations, the goal may be to eliminate a local population but because feral swine are not part of the mix of native wildlife species, they are not an essential component of the native biodiversity. The reduction in feral swine populations could reduce competition within niches for some species, thereby increasing biodiversity.

2.3.3 Wildlife Damage is a Cost of Doing Business -- a "Threshold of Loss" Should be Established Before Allowing any Lethal FSDM

WS is aware that some people feel federal wildlife damage management should not be allowed until economic losses reach some arbitrary pre-determined threshold level. Although some damage can be tolerated by most resource owners, WS has the legal direction to respond to requests for wildlife damage management, and it is program policy to aid each requester with the goal of minimizing losses. WS uses the Decision Model thought process discussed in Chapter 3 to determine appropriate strategies. In a ruling for Southern Utah Wilderness Alliance, et al. vs. Hugh Thompson, Forest Supervisor for the Dixie NF, et al., the United States District Court of Utah denied plaintiffs' motion for preliminary injunction. In part the court found that a forest supervisor need only show that damage from wildlife is threatened, to establish a need for wildlife damage management (Civil No. 92-C-0052A January 20, 1993). Thus, there is judicial precedence indicating that it is not necessary to establish a criterion such as percentage of loss of a herd to justify the need for wildlife damage management actions.

2.3.4 American Indian and Cultural Resource Concerns

The National Historic Preservation Act (NHPA) of 1966, and its implementing regulations (36 CFR 800), requires federal agencies to: 1) determine whether activities they propose constitute "undertakings" that can result in changes in the

character or use of historic properties and, 2) if so, to evaluate the effects of such undertakings on such historic resources and consult with the State Historic Preservation Office regarding the value and management of specific cultural, archaeological and historic resources, and 3) consult with appropriate American Indian Tribes to determine whether they have concerns for traditional cultural properties in areas of these federal undertakings. WS actions on Tribal lands are only conducted at the Tribe's request and under signed agreement; thus, the Tribes have control over any potential conflict with cultural resources on Tribal properties. In addition, this EA will be made available to all Tribes in the State to solicit their review and comment prior to issuing a Decision. As was discussed in Section 1.7.2.3, WS FSDM actions are not undertakings as defined by the NHPA.

2.3.5 Cost-effectiveness of FSDM

"Does the value of damage avoided equal or exceed the cost of providing FSDM?" The Council on Environmental Quality (CEQ) regulations (40 CFR 1502.23) do not require a formal, monetized cost-benefit analysis to comply with NEPA. Consideration of this issue is not essential to making a reasoned choice among the alternatives being considered. USDA (1997) stated that:

"Cost effectiveness is not, nor should it be, the primary goal of the APHIS-*WS* program. Additional constraints, such as environmental protection, land management goals, and others, are considered whenever a request for assistance is received. These constraints increase the cost of the program while not necessarily increasing its effectiveness, yet they are a vital part of the APHIS-*WS* program."

3.0 CHAPTER 3: ALTERNATIVES INCLUDING THE PROPOSED ACTION

3.1 Alternatives Analyzed in Detail are:

- 1) Alternative 1 - Continue the Current WS FSDM Program (the Proposed Action/No Action Alternative). This is the Proposed Action as described in Chapter 1 and is the "No Action" alternative as defined by CEQ for analysis of ongoing programs or activities.
- 2) Alternative 2 - Nonlethal FSDM Only By WS. Under this alternative, WS would use only nonlethal methods to reduce damage by feral swine.
- 3) Alternative 3 - Technical Assistance Only. Under this alternative, WS would not conduct any direct operational FSDM activities in Oklahoma. If requested, affected resource owners would be provided with technical assistance information only.
- 4) Alternative 4 - No Federal WS FSDM. This alternative consists of no Federal FSDM program by WS.

3.2 Description Of The Alternatives

3.2.1. Alternative 1 - Continue the Current Federal FSDM Program (No Action/Proposed Action)

The No Action alternative is a procedural NEPA requirement (40 CFR 1502), is a viable and reasonable alternative that could be selected, and serves as a baseline for comparison with the other alternatives. The No Action alternative is the continuation of an ongoing program and, as defined here, is consistent with the CEQ's definition (CEQ 1981).

The proposed action is to continue the current portion of the WS program in Oklahoma that responds to requests for FSDM, and in response to increasing distribution of feral swine throughout Oklahoma, prepare for increased conflicts with agricultural and natural resources, property, and threats to human health and safety in Oklahoma. To meet these goals WS would have the objective of responding to all requests for assistance with, at a minimum, technical assistance or self-help advice, or, where appropriate and when cooperative or congressional funding is available, direct damage management assistance in which professional WS personnel conduct FSDM. An IWDM approach would be implemented which would allow the use of all available legal techniques, used singly or in combination, to meet the need of each requestor for resolving conflicts with feral swine. Agricultural producers and others requesting assistance would be provided with information regarding the use of effective nonlethal and lethal techniques. Lethal methods used by WS would include shooting, aerial hunting, trapping, snaring, or euthanasia following live capture by trapping. Nonlethal methods used by WS may include fencing barriers

and deterrents. In many situations, the implementation of nonlethal methods such as fencing would be the responsibility of the requestor to implement. FSDM by WS would be allowed in the State, when requested, on private property sites or public facilities where a need has been documented, upon completion of an Agreement for Control. All management actions would comply with appropriate federal, state, and local laws.

3.2.2 Alternative 2 - Nonlethal FSDM Only By WS

This alternative would require WS to use nonlethal methods only to resolve feral swine damage problems. Persons receiving technical assistance could still resort to lethal methods that were available to them. Aerial hunting and the use of snares to control feral swine is restricted to WS personnel. Therefore, the use of these methods by private individuals would be illegal.

3.2.3 Alternative 3 - Technical Assistance Only

This alternative would not allow for WS operational FSDM in Oklahoma. WS would only provide technical assistance and make recommendations when requested. Producers, property owners, agency personnel, or others could conduct FSDM using traps, shooting, or any nonlethal method that is legal. Aerial hunting and the use of snares to control feral swine is restricted to WS personnel. Therefore, the use of these methods by private individuals would be illegal.

3.2.4 Alternative 4 - No Federal WS FSDM

This alternative would eliminate Federal involvement in FSDM in Oklahoma. WS would not provide direct operational or technical assistance and requesters of WS services would have to conduct their own FSDM without WS input.

3.3 FSDM Strategies Available to WS in Oklahoma

The strategies and methodologies described below include those that could be used or recommended under Alternatives 1, 2 and 3 described above. Alternative 4 would terminate both WS technical assistance and operational FSDM by WS.

3.3.1 Alternative 1 - Continue the WS FSDM Program

The most effective approach to resolving wildlife damage is to integrate the use of several methods simultaneously or sequentially to achieve a cumulative effect. The philosophy behind IWDM is to implement the best combination of effective management methods in a cost-effective manner while minimizing the potentially harmful effects on humans, target and nontarget species, and the environment. IWDM may incorporate cultural practices (i.e., animal husbandry), habitat modification (i.e., exclusion), animal behavior modification (i.e., scaring), removal

of individual offending animals, local population reduction, or any combination of these, depending on the circumstances of the specific damage problem.

3.3.1.1 The IWDM Strategies That WS Employs

Technical Assistance Recommendations.

“Technical assistance” as used herein is information, demonstrations, and advice on available and appropriate wildlife damage management methods. The implementation of damage management actions is the responsibility of the requester. In some cases, WS provides supplies or materials that are of limited availability for non-WS entities to use. Technical assistance may be provided following a personal or telephone consultation, or during an on-site visit with the requester. Generally, several management strategies are described to the requester for short and long-term solutions to damage problems; these strategies are based on the level of risk, need, and the practicality of their application.

Under APHIS NEPA Implementing regulations and specific guidance for the WS program, WS technical assistance is categorically excluded from the need to prepare an EA or EIS. However, it is discussed in this EA because it is an important component of the IWDM approach to resolving wildlife damage problems.

Direct Damage Management Assistance

This is the implementation or supervision of damage management activities by WS personnel. Direct damage management assistance may be initiated when the problem cannot effectively be resolved through technical assistance alone, and when Agreements for Control or other comparable instruments provide for WS direct damage management. The initial investigation defines the nature, history, extent of the problem, species responsible for the damage, and methods that would be available to resolve the problem. Professional skills of WS personnel are often required to effectively resolve complex wildlife damage problems.

3.3.1.2 WS Decision Making

WS personnel are frequently contacted after requesters have tried or considered both nonlethal and lethal methods and found them to be ineffective for any number of reasons. Misapplied or inappropriate methods are often impractical, too costly, time consuming or inadequate for reducing damage to an acceptable level. WS personnel assess the problem, evaluate the appropriateness and availability (legal and administrative) of strategies and methods based on biological, economic and social considerations. Following this evaluation, the methods deemed to be practical for the situation are developed into a management strategy. After the management strategy has been implemented, monitoring is conducted and evaluation continues to assess

the effectiveness of the strategy. This conscience thought process for evaluating and responding to damage complaints is the WS Decision Model (Slate et al. 1992). In the model, most damage management efforts consist of continuous feedback between receiving the request and monitoring the results of the damage management strategy. The Decision Model is not a documented process, but a mental problem-solving process common to most if not all professions.

3.3.1.3 FSDM Methods Available for Use

Resource Management

Resource management includes a variety of practices that may be used by agriculture producers to reduce their exposure to potential feral swine depredation losses. Implementation of these practices is appropriate when the potential for depredation can be reduced without significantly increasing the cost of production or diminishing the resource owner's ability to achieve land management and production goals. Changes in resource management are recommended through the technical assistance extended to producers when the change appears to present a continuing means of averting losses.

Animal Husbandry. This general category includes modifications in the level of care and attention given to livestock, shifts in the timing of breeding and births, selection of less vulnerable livestock species to be produced, and the introduction of human custodians or guarding animals to protect livestock. The level of care or attention given to livestock may range from daily to seasonal. Generally, as the frequency and intensity of livestock handling increases so does the degree of protection. In operations where livestock are left unattended for extended periods, the risk of depredation is greatest. The risk of depredation can be reduced when operations permit nightly gathering so livestock are unavailable during the hours when predators are most active. Additionally, the risk of depredation is usually greatest with immature livestock. This risk diminishes as age and size increase and can be minimized by holding expectant females in pens or sheds to protect births and by holding newborn livestock in pens for the first 2 weeks. Shifts in breeding schedules can also reduce the risk of depredation by altering the timing of births to coincide with the greatest availability of natural prey to predators or to avoid seasonal concentrations of migrating predators such as golden eagles.

The use of human custodians and guarding animals can also provide significant protection in some instances. The presence of herders to accompany bands of sheep on open range may help ward off feral swine. Guard animals have also proven successful in many sheep and goat operations.

Altering animal husbandry to reduce wildlife damage has many limitations. Nightly gathering may not be possible where livestock are in many fenced pastures and where grazing conditions require livestock to scatter. Hiring extra herders, building secure holding pens, and adjusting the timing of births is usually expensive. The timing of births may be related to weather or seasonal marketing of young livestock. The expense associated with a change in husbandry practice may exceed the savings.

The supply of proven guarding dogs is generally quite limited, requiring that most people purchase and rear a pup. Therefore, there is usually a 4 to 8 month period of time necessary to raise a guarding dog before it becomes an effective deterrent to predators. Since 25 to 30 percent of dogs are not successful, there is a reasonable chance that the first dog raised as a protector will not be useful. The effectiveness of guarding dogs may not be sufficient in areas where there is a high density of predators, where livestock widely scatter in order to forage, or where dog to livestock ratios are less than recommended. Also, guarding dogs often harass and kill non-target wildlife.

Modification of Human Behavior. WS may recommend alteration of human behavior to resolve potential conflicts between humans and wildlife. For example, WS may recommend the elimination of feeding of wildlife that occurs in parks and forests near suburban areas or golf courses. This includes inadvertent feeding allowed by improper disposal of garbage. Feral swine adapt well to living near human settlements, but their proximity to humans may result in damage to property. However, it is difficult to consistently enforce no-feeding regulations and to effectively educate all people concerning the potential liabilities of feeding wildlife.

Physical Exclusion

Physical exclusion methods restrict the access of feral swine to resources. These methods provide a means of appropriate and effective prevention of wildlife damage in many situations. Physical exclusion methods used or recommended by WS are described in the following section.

Fencing. Fences are widely used to prevent damage. Predator exclusion fences constructed of woven wire or multiple strands of electrified wire are also effective in some areas for feral swine, but fencing does have limitations. Even an electrified fence may not be swine-proof and the expense exceeds the benefit in most cases. If large areas are fenced, the feral swine have to be removed from the enclosed area to make it useful. Some fences inadvertently trap, catch or affect the movement of non-target wildlife. Lastly, fencing is not practical or legal in some areas (e.g., restricting access to public land).

Wildlife Management

Reducing wildlife damage through wildlife management is achieved through the use of a myriad of techniques. The objective of this approach is to alter the behavior of or repel the target species, remove specific individuals from the population, reduce local population densities, or suppress/extirpate exotic species populations to eliminate or reduce the potential for loss or damage to property and natural resources.

Frightening Devices. Frightening devices are used to repel feral swine from an area where they are a damage risk (i.e., airport, crops). The success of frightening methods depends on the swine's fear of, and subsequent aversion to, offensive stimuli. A persistent effort is usually required to effectively apply frightening techniques and the techniques must be sufficiently varied to prolong their effectiveness. Over time, animals often habituate to commonly used scare tactics and ignore them. In addition, in many cases animals frightened from one location become a problem at another. Scaring devices, for the most part, are directed at specific target species by WS specialists working in the field. However, several of these devices, such as scarecrows and propane exploders can be automated.

Harassment and other scaring devices and techniques to frighten animals are probably the oldest methods of combating wildlife damage. These devices may be either auditory or visual and generally only provide short-term relief from damage. A number of sophisticated techniques have been developed to scare or harass wildlife from an area. The use of noise-making devices is the most popular and commonly used. Other methods include harassment with visual stimuli (e.g., scarecrows, human effigies, balloons, mylar tape, wind socks), vehicles, people, or dogs. These are used to frighten swine from the immediate vicinity of the damage prone area. As with other WDM efforts, these techniques tend to be more effective when used collectively in a varied regime rather than individually. However, the continued success of these methods frequently requires reinforcement by limited shooting (see Shooting).

Propane Exploders operate on propane gas and are designed to produce loud explosions at controllable intervals. They are strategically located (i.e., elevated above the vegetation) in areas of high feral swine use to frighten them from the problem site. Because animals are known to habituate to sounds, exploders must be moved frequently and used in conjunction with other scare devices. Exploders can be left in an area after dispersal is complete to discourage animals from returning.

Pyrotechnics, shell-crackers and scare cartridges, are commonly used to repel wildlife. Shell-crackers are 12 gauge shotgun shells containing firecrackers that are projected up to 75 yards in the air before exploding. They can be used to frighten feral swine and are most often used for scaring them to prevent

crop depredations. The purpose is to produce an explosion between feral swine and their objective, the crop. Noise bombs, whistle bombs, racket bombs, and rocket bombs are fired from 15 millimeter flare pistols. They are used similarly to shell-crackers but are projected for shorter distances. Noise bombs are firecrackers that travel about 75 feet before exploding. Whistle bombs are similar to noise bombs, but whistle in flight but do not explode. They produce a noticeable response because of the trail of smoke and fire, as well as the whistling sound. Racket bombs make a screaming noise in flight and do not explode. Rocket bombs are similar to noise bombs but may travel up to 150 yards before exploding.

Lights, such as strobe, barricade, and revolving units, are used with mixed results to frighten predators. Brilliant lights, similar to those used on aircraft, are most effective in frightening night feeding mammals. These extremely bright-flashing lights have a blinding effect, causing confusion that reduces the animal's ability to locate its food or roosting spot. However, most predators rapidly become accustomed to such lights and their long-term effectiveness is questionable. In general, the type of light, the number of units, and their location are determined by the size of the area to be protected and by the power source available.

Other Scaring Devices are available to scare wildlife. The Electronic Guard (siren strobe-light device), a battery-powered, portable unit that houses a strobe light and siren has been developed by NWRC. The device activates automatically at nightfall and is programmed to discharge periodically throughout the night. Efficacy of strobe-sirens is highly variable, but in certain situations, this device has been used successfully to reduce coyote and bear depredation on sheep. The technique has proven most successful when used at "bedding grounds" where sheep gather to sleep for the night. The device, however, is a short-term tool used to deter predation until livestock can be moved to another pasture, brought to market, or other predator damage management methods are implemented.

Chemical Repellents. Chemical repellents are nonlethal chemical formulations used to discourage or disrupt particular behaviors of wildlife. Chemical repellents are categorized by their delivery mechanism: olfactory, taste, and tactile. Olfactory repellents must be inhaled to be effective. These are normally gases, or volatile liquids and granules, and require application to areas or surfaces that need protecting. Taste repellents are compounds (i.e., liquids, dusts, granules) that are normally applied to trees, shrubs, and other materials that are likely to be eaten or gnawed by the target species. Tactile repellents are normally thick, liquid-based substances which are applied to areas or surfaces to discourage travel of wildlife by causing irritation such as to the feet. Most repellents are ineffective or are short-lived in reducing or eliminating damage caused by wildlife, therefore, are not used very often by APHIS/WS. Chemical repellents available commercially for mammals

contain a variety of active ingredients such as powdered or putrescent egg concentrate (i.e., Deer Away[®]), bone tar oil (i.e., Magic Circle Deer Repellent[®]), denatonium saccharide (i.e., Ro-Pel[®]), capsaicin from hot pepper (i.e., Hot Sauce[®], Miller[®]), ammonium soaps (i.e., Hinder[®]) and sodium salts of higher fatty acids (i.e., Bye Deer[®]), naphthalene (Chaperone Squirrel and Bat Repellent[®]), tobacco dust (i.e., F&B Rabbit and Dog Chaser[®]), tetramethylthiuram disulfide (i.e., Gustafson Thiram-42[®]), anthraquinone, (i.e., Flight Control[®]) and zinc dimethyldithiocarbamate (i.e., Earl May Ziram). These compounds are relatively nontoxic to the environment with the amount of active ingredient used in the different formulations, especially following label instructions. Many of the active ingredients in repellents are listed on the EPA's 25b exempt list, and have reduced registration requirements because of their relatively low risk to the environment. Most of the above repellents have labels with, at most, a "Caution" statement and can be purchased by the general public and most can be used for feral swine.

Capture or Take Methods. Several methods are available to capture or take offending animals. The appropriateness and efficacy of any technique will depend on a variety of factors.

Cage Traps come in a variety of styles for WDM to target different species. The most commonly known cage traps used in the current program are box traps. Box traps are usually rectangular, made from wood or heavy gauge wire mesh. These traps are used to capture animals alive and can often be used where many lethal or more dangerous tools would be too hazardous. Box traps are well suited for use in residential areas. Cage traps usually work best when baited with foods attractive to the target animal. They are used to capture animals ranging in size from mice to deer, but are usually impractical in capturing most large animals. However, large cage traps do work well for capturing feral swine, provided the traps can be transported by vehicle to the damage sites.

Snares made of wire or cables are among the oldest existing WDM tools. They can be used effectively to catch most species including feral swine. They are generally not affected by inclement weather. Snares may be employed as either lethal or live-capture devices depending on how or where they are set. Snares set to capture feral swine by the neck are usually lethal but stops can be attached to the cable to make the snare a live capture device. Snares positioned to capture the animal around the body can be a useful live-capture device, but they are more often used as lethal control techniques. Snares can be effectively used wherever a target animal moves through a restricted lane of travel (e.g., trails through vegetation). When a feral swine moves forward into the loop formed by the cable, the noose tightens and it is held.

The catch-pole snare is used to capture or safely handle problem animals. This device consists of a hollow pipe with an internal cable or rope that forms

an adjustable noose at one end. The free end of the cable or rope extends through a locking mechanism on the end opposite of the noose. By pulling on the free end of the cable or rope, the size of the noose is reduced sufficiently to hold an animal. Catch poles are used primarily to remove live animals from traps without danger to or from the captured animal.

Shooting is conducted with rifles, shotguns, and air guns and is very selective for the target species. Shooting is sometimes used as the primary FSDM method in many feral swine control operations. Often, though, shooting is only used opportunistically where a WS Specialist sees the target swine in the damage area at random. Shooting is limited to locations where it is legal and safe to discharge firearms. Shooting can also be used in conjunction with spotlighting.

Lethal reinforcement through shooting is often necessary to ensure the continued success in swine scaring and harassment efforts (see the discussion on shooting under Frightening Devices). In situations where the feeding instinct is strong, feral swine can quickly adapt to scaring and harassment efforts unless the FSDM program is periodically supplemented by shooting.

Aerial Shooting or aerial hunting (shooting from an aircraft) is a commonly used FSDM method. Aerial hunting is species specific and can be used for immediate control to reduce livestock and natural resource losses if weather, terrain, and cover conditions are favorable. Fixed-wing aircraft are most frequently used in flat and gently rolling terrain whereas helicopters, with better maneuverability, have greater utility and are safer over rugged terrain and timbered areas. In broken timber or deciduous cover, aerial hunting is more effective in winter when snow cover improves visibility and leaves have fallen. The WS program aircraft-use policy helps ensure that aerial hunting is conducted in a safe and environmentally sound manner, in accordance with Federal and State laws. Pilots and aircraft must be certified under established WS program procedures and only properly trained WS employees are approved as gunners.

Aircraft Overflights have created concerns of disturbing wildlife. A number of studies have looked at responses of various wildlife species to aircraft overflights. The National Park Service reviewed studies on the effects of aircraft overflights on wildlife. The report revealed that a number of studies have documented responses by certain wildlife species that suggest adverse impacts could occur. Few, if any studies, have proven that aircraft overflights cause significant adverse impacts on wildlife populations, although the report stated it is possible to draw the conclusion that impacts to populations are occurring. It appears that some species will frequently or, at least occasionally, show adverse responses to even minor overflight occurrences. In general, it appears that the more serious potential impacts occur when overflights are

frequent such as hourly and over long periods of time which represents "chronic exposure." Chronic exposure situations generally involve areas near commercial airports and military flight training facilities. APHIS/WS aerial hunting operations occur in relatively remote rangeland areas where tree cover is at most scattered to allow for visibility of target animals from the air. In addition, APHIS/WS spends relatively little time over any one area.

APHIS/WS has actively used fixed-wing aircraft and some helicopters for aerial hunting in areas inhabited by wildlife for years. The fixed-wing aircraft used by APHIS/WS are relatively quiet whereas the helicopter is somewhat noisier. APHIS/WS conducts aerial WDM activities on areas only under agreement and concentrates efforts during certain times of the year to specific areas such as lambing grounds. APHIS/WS Predator Environmental Assessments that have looked at the issue of aerial hunting overflights on wildlife have found that APHIS/WS has annually flown less than 10 min./mi.² on properties under agreement; basically APHIS/WS flies very little over any one property under agreement in any given year. As a result, no known problems to date have occurred with APHIS/WS aerial hunting overflights on wildlife nor are they anticipated in the future.

Hunting Dogs are frequently used in WDM to locate, pursue, or decoy animals. APHIS/WS uses trailing/tracking dogs, decoy dogs, detector dogs, and trap-line companion dogs. Training and maintaining suitable dogs requires considerable skill, effort, and expense. There must be sufficient WDM needs for dogs to make the effort of training worthwhile.

Tracking Dogs or trailing dogs are commonly used to track and "tree" target feral swine. Dogs commonly used are different breeds of hounds such as blue tick, red-bone, and Walker. They become familiar with the scent of the animal they are to track and follow, and will strike (howl) when they smell them. Tracking dogs are trained not to follow the scent of nontarget species. WS Specialists find the track of the target species and put their dogs on it. Typically, if the track is not too old, the dogs can follow the trail and bay the animal. When the dogs bay the animal, it usually seeks refuge in a thicket on the ground at bay. The dogs stay with the animal until the WS Specialists arrives and dispatches, tranquilizes, or releases it, depending on the situation. A possibility exists that dogs will switch to a fresher trail of a nontarget species while pursuing the target species. This usually occurs with dogs that are trained to follow other animals as well. However, this is a non-desirable trait for hunting dogs and dog handlers watch for, and provide training to prevent this behavior.

Chemical Immobilizing and Euthanizing Drugs are important tools for managing wildlife. Under certain circumstances, WS personnel are involved in the capture of animals where the safety of the animal, personnel,

or the public are compromised and chemical immobilization provides a good solution to reduce these risks. WS employees that use immobilizing drugs are certified for their use and follow the guidelines established in the WS Field Operational Manual for the Use of Immobilization and Euthanasia Drugs. Telazol® (tiletamine), and Ketamine/Xylazine are immobilizing agents used by APHIS/WS to capture and remove wild animals. These are typically used in urban, recreational, and residential areas where the safe removal of a problem animal is most easily accomplished with a drug delivery system (e.g., darts from rifle, pistol, or blow guns, syringe pole, or hand-fed baits). Immobilization is usually followed by euthanasia. Euthanasia is usually performed with drugs such as Beuthanasia-D® or Fatal-Plus® which contain forms of sodium phenobarbital. Euthanized animals are disposed of by incineration or deep burial to avoid secondary hazards. Drugs are monitored closely and stored in locked boxes or cabinets according to APHIS/WS policies, and Department of Justice, Drug Enforcement Administration or Food and Drug Administration (FDA) guidelines. Most drugs fall under restricted-use categories and must be used under the appropriate license from the U.S. Department of Justice, Drug Enforcement Administration which WS does hold.

Chemosterilants and Contraception cause loss of fecundity in wildlife. Contraceptive measures for wildlife can be grouped into four categories: surgical sterilization, oral contraception, hormone implantation, and immunocontraception (i.e., the use of contraceptive vaccines). These techniques would require that each individual animal receive either single, multiple, or possibly daily treatment to successfully prevent conception. The use of oral contraception, hormone implantation, or immunocontraception would be subject to approval by Federal and State regulatory agencies.

These methods are generally not practical for WS operational activities because: (1) surgical sterilization would require that each animal be captured and sterilization conducted by licensed veterinarians and would therefore be extremely labor intensive and expensive; and (2) there are not currently any Federally or State approved chemosterilants available for operational use in predator damage management.

As alternative methods of delivering sterilants are developed, sterilization may prove to be a more practical tool in some circumstances. Reduction of local populations could conceivably be achieved through natural mortality combined with reduced fecundity. In essence, no animals would be killed directly with this sterilization, just their potential for reproducing would be eliminated. A disadvantage to contraception is that the animals would continue to cause damage, especially for overabundant wildlife populations unless it was combined with another technique to reduce the population in the

damage area. Populations of animals that commonly disperse and have that opportunity would not be as affected by contraception techniques.

Nonlethal Methods presently utilized by OK WS

Agricultural producers and others requesting assistance are provided with information regarding the use of nonlethal techniques. These are techniques that consist primarily of nonlethal preventive methods such as cultural methods and habitat modification that could be implemented by an agricultural producer or property owner.

Animal behavior modification refers to tactics that alter the behavior of feral swine to reduce damages. Some of these tactics include:

- Exclusions such as fencing (to exclude feral swine)
- Propane exploders (to scare feral swine)

Lethal Methods presently utilized by OK WS

Shooting is the practice of selectively removing feral swine by shooting with a shotgun, or rifle. This involves actively hunting the feral swine from the ground, sometimes with the aid of dogs, or may involve hunting from rotary or fixed wing aircraft.

Traps and snares are often utilized in reducing feral swine conflicts. Various types of traps and snares are designed to capture feral swine alive initially, but captured swine are euthanized rather than released elsewhere.

3.3.2 Alternative 2 - Nonlethal FSDM Only By WS

This alternative would require WS to use nonlethal methods only to resolve feral swine damage problems. Persons receiving technical assistance, as well as state agency personnel, or others could conduct FSDM activities including the use of trapping, shooting, and any lethal or nonlethal methods they wish. The basis of method selection may not be biologically sound or prudent. Aerial hunting and the use of snares to control feral swine is restricted to WS personnel. Therefore, the use of these methods by private individuals would be illegal.

3.3.3 Alternative 3 - Technical Assistance Only

This alternative would not allow for WS operational FSDM in Oklahoma. WS would only provide technical assistance and make recommendations when requested. Producers, property owners, agency personnel, or others could conduct FSDM using traps, shooting, or any nonlethal method that is legal. Aerial hunting

and the use of snares to control feral swine is restricted to WS personnel. Therefore, the use of these methods by private individuals would be illegal.

3.3.4 Alternative 4 - No Federal WS FSDM

This alternative would eliminate Federal involvement in FSDM in Oklahoma. WS would not provide direct operational or technical assistance and requesters of WS services would have to conduct their own FSDM without WS input. Information on future developments in nonlethal and lethal management techniques that culminate from research efforts by WS's research branch would not be as accessible to affected resource owners or managers, as the OK WS program would not be a direct source of such information. Producers, state agency personnel, or others would be left with the option to conduct FSDM activities including the use of trapping, shooting, and any lethal or nonlethal methods. The basis of method selection may not be biologically sound or prudent.

3.4 Alternatives Considered But Not Analyzed in Detail With Rationale

Several alternatives were considered but not analyzed in detail. These were:

3.4.1 Compensation for Feral Swine Damage Losses

The Compensation alternative would require the establishment of a system to reimburse persons impacted by feral swine damage. This alternative was eliminated from further analysis because no federal or state laws currently exist to authorize such action. Under such an alternative, WS would not provide any direct control or technical assistance. Aside from lack of legal authority, analysis of this alternative in the FEIS indicated that the concept has many drawbacks (USDA 1997):

- It would require larger expenditures of money and labor to investigate and validate all damage claims, and to determine and administer appropriate compensation. A compensation program would likely cost several times as much as the current program.
- Compensation would most likely be below full market value. It is difficult to make timely responses to all requests to assess and confirm damage, and certain types of damage could not be conclusively verified. For example, it would be impossible to prove conclusively in individual situations that feral swine were responsible for disease outbreaks even though they may actually have been responsible. Thus, a compensation program that requires verification would not meet its objective for mitigating such losses.
- Compensation would give little incentive to resource owners to limit damage through improved cultural, husbandry, or other practices and management strategies.

- Not all resource owners would rely completely on a compensation program and lethal control would most likely continue as permitted by state law.
- Compensation would not be practical for reducing threats to human health and safety.

3.4.2 Short Term Eradication and Long Term Population Suppression

An eradication alternative would direct all WS program efforts toward total long term elimination of feral swine populations on private, state, local government, and Tribal lands within entire cooperating counties or larger defined areas in the State.

In Oklahoma, eradication of feral swine is not a desired population management goal of state agencies. Although generally difficult to achieve, elimination of a local population of feral swine may be the goal of individual FSDM projects. This is because feral swine are not native to North America and are only present because of human introduction. However, eradication as a general strategy for managing feral swine damage will not be considered in detail because:

- Eradication is not acceptable to most members of the public.
- Because feral swine populations inhabit large parts of North America, eradication would have to be targeted at the entire North American populations to be successful. That would not be feasible or desirable.

Suppression would direct WS program efforts toward managed reduction of certain problem populations or groups. In areas where damage can be attributed to localized populations of feral swine, WS can decide to implement local population suppression as a result of using the WS Decision Model. Problems with the concept of suppression are similar to those described above for eradication.

It is not realistic or practical to consider large-scale population suppression as the basis of the WS program. Typically, WS activities in the State would be conducted on a very small portion of the sites or areas inhabited or frequented by problem feral swine.

3.5 Mitigation And Standard Operating Procedures For Wildlife Damage Management Techniques

Mitigation measures are any features of an action that serve to prevent, reduce, or compensate for impacts that otherwise might result from that action. The current WS Program, nationwide and in Oklahoma, uses many such mitigation measures and these are discussed in detail in Chapter 5 of the FEIS (USDA 1997). Some key mitigating measures pertinent to the proposed action and alternatives that are incorporated into WS's Standard Operating Procedures include the following.

- The WS Decision Model, which is designed to identify effective wildlife damage management strategies and their impacts, is consistently used.
- Traps and snares are not set within 30 feet of exposed carcasses to prevent the capture of scavenging birds. The exception to this is for the capture of cougar and black bear because the weight of these target animals allows foot snare tension adjustments to exclude the capture of smaller nontarget animals such as scavenging birds.
- Leghold trap underpan tension devices and foot snare trigger tension devices are used throughout the Program to reduce the capture of nontarget wildlife that weigh less than the target species.
- Nontarget animals captured in leghold traps or foot snares are released unless it is determined by WS Specialists that they will not survive.
- Conspicuous, bilingual warning signs alerting people to the presence of traps, snares and M-44s are placed at major access points when they are set in the field.
- Reasonable and prudent alternatives and measures are established through consultation with FWS and implemented to avoid adverse impacts to T&E species.
- All State WS Specialists who use restricted chemicals are trained and certified by WS personnel or others who are experts in the safe and effective use of these materials or are supervised by such persons according to ODAFF's definition (ORS 2, §3-81).
- Training and certification is required of crewmembers for aerial hunting projects. This training includes training in the use of personal protective equipment, emergency procedures in the event of an aerial accident, target identification and additional firearms training specific to aircraft. Commercial rated pilots must pass a Class II physical exam as defined by the Federal Aviation Administration (FAA) and are subjected to recurrent WS safety training for low-level aircraft. Aircraft are inspected to meet or exceed Part 135 FAA aircraft standards.

Some additional mitigating factors specific to the current program include the following:

- Management actions are directed toward localized populations or groups of target species and/or individual offending members of those species. Generalized population suppression across the State will not be conducted.
- Although hazards to the public from FSDM devices and activities are low according to a formal risk assessment (USDA 1997, Appendix P), hazards to the public and their pets are even further reduced by the fact that FSDM activities are primarily

conducted on private or other properties where public access is highly restricted or denied.

4.0 CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

Chapter 4 provides information needed for making informed decisions in selecting the appropriate alternative for meeting the purpose of the proposed action. This chapter analyzes the environmental consequences of each alternative from Chapter 3 in relation to the issues identified for detailed analysis in Chapter 2. This section analyzes the environmental consequences of each alternative in comparison with the proposed action to determine if the real or potential impacts would be greater, lesser, or the same. Therefore, the proposed action or current program alternative serves as the baseline for the analysis and the comparison of expected impacts among the alternatives. Therefore, the background and baseline information presented in the analysis of the current program alternative also applies to the analysis of each of the other alternatives.

The following resource values within the State are not expected to be negatively impacted by any of the alternatives analyzed: soils, geology, minerals, floodplains, wetlands, visual resources, air quality, aquatic resources and range. These resources will not be analyzed further. Other than minor uses of fuels for motor vehicles and other materials, there are no irreversible or irretrievable commitments of resources.

The proposed project will not cause major ground disturbance, will not cause any physical destruction or damage to property, does not cause any alterations of property, wildlife habitat, or landscapes, and does not involve the sale, lease, or transfer of ownership of any property. The proposed methods also do not have the potential to introduce visual, atmospheric, or audible elements to areas in which they are used that could result in effects on the character or use of historic properties. (See Section 1.7.2.3).

4.1 Environmental Consequences for Issues Analyzed in Detail

4.1.1 Effects on Feral Swine Populations

4.1.1.1 Alternative 1 - Continue the Current Federal FSDM Program (The Proposed Action)

WS uses nonlethal and lethal methods as needed for appropriate biologically sound, effective FSDM. The analysis for magnitude of impact generally follows the process described in Chapter 4 of USDA (1997). Magnitude is described in USDA (1997) as "... a measure of the number of animals killed in relation to their abundance." Magnitude may be determined either quantitatively or qualitatively. Quantitative determinations are based on population estimates, allowable harvest levels, and actual harvest data. Qualitative determinations are based on population trends and harvest data when available. Generally, WS only conducts damage management on species whose population densities are high and usually only after they have caused damage. Additionally, introduced or invasive species are often eradicated if possible. However, considering the establishment of feral swine

in Oklahoma, it is highly unlikely that this will be accomplished in the foreseeable future.

In 1993, the ODAFF Animal Industries Division, produced a distribution map for feral swine in Oklahoma. This map indicated that 26 Oklahoma counties had a presence of feral hogs. Feral swine damage management conducted by WS in FY 1993 resulted in the harvest of 19 feral hogs (OK MIS). An update in May and September 1994 identified an additional 9 counties with feral hog presence for a total of 35 of 77 counties. WS harvested 14 feral swine in FY 1994. In 2004, a survey of Oklahoma Wildlife Specialists identified an increase in feral swine to 69 of 77 Oklahoma counties. From October 2003 through August 2004, preliminary data indicates that approximately 255 feral swine were harvested as a result of feral swine damage management by WS in Oklahoma. From FY 1993 through August 2004, 1598 feral swine have been harvested as a result of feral swine damage management by WS in Oklahoma.

Until recently, all swine in the state were considered domestic livestock under State Statutes (Title 4), with no definition or provisions for "feral swine". However, the Oklahoma legislature enacted laws covering feral swine because their damage was escalating in the State (see Section 1.7.3). Feral swine, being non-indigenous and because they cause damage to a variety of resources and negatively impact and compete with native flora and fauna, are considered by many wildlife professionals to be an undesirable component of North American wild and native ecosystems. Any reduction in feral swine populations in North America, even to the extent of complete eradication, would have a beneficial impact to native wildlife and the agricultural community. However as previously mentioned, eradication of feral swine is not a realistic population management goal of OK WS because they are too well established and it would require considerable expense and manpower to accomplish this.

4.1.1.2 Alternative 2 - Nonlethal FSDM Only By WS

Under this alternative, WS would not kill any feral swine because no lethal methods would be used. Without WS conducting some level of lethal FSDM activities, private FSDM efforts would likely increase, leading to potentially similar impacts on feral swine populations as those of the current program alternative. Non-lethal methods used by WS, such as propane cannons, would continue, but these methods are only effective for a short time and ineffective in some situations. Although there are no chemical toxicants labeled for feral swine, it is hypothetically possible that frustration caused by the inability to reduce losses could lead to illegal use of chemicals by landowners which could lead to real but unknown impacts on target, as well as nontarget, species populations. For example, USDA (1997) cited a study by White et al. (1989) that gave case histories of people using famphur to illegally kill blackbirds. In Kentucky a corporation was fined for illegally using carbofuran to destroy

unwanted predators including coyotes and raptors at a private hunting club (Porter 2004). Similarly, on a Georgia quail plantation, predatory birds were being killed by eggs that had been injected with carbofuran (the Federal Wildlife Officer 2000); in Oklahoma, Federal agents charged 31 individuals with illegally trapping and killing hawks and owls to protect fighting chickens (USFWS 2003). The Texas Department of Agriculture has a website and brochure devoted solely to preventing pesticide misuse in controlling agricultural pests (Texas Department of Agriculture 2004). Similarly, the Britain Department for Environment, Food and Rural Affairs has a "Campaign against Illegally Poisoning of Animals" (Dacko 2004). Therefore, WS believes that it is in the best interest of the public, pets, and the environment that a professional FSDM program be available because private resource owners could elect to conduct their own control rather than use government services and simply out of frustration resort to inadvisable techniques.

4.1.1.3 Alternative 3 - Technical Assistance Only

Under this alternative, WS would have no impact on feral swine populations in Oklahoma because the OK WS program would be limited to providing advice only and not conduct any direct operational FSDM activities. Private efforts to reduce or prevent feral swine damage and perceived disease transmission risks would likely increase and result in similar impacts on the feral swine population as described under the current program alternative. As discussed in section 4.1.1.2, it is hypothetically possible that frustration caused by the inability to reduce losses could lead to illegal use of chemicals by landowners which could lead to real but unknown impacts on target, as well as nontarget, species populations.

4.1.1.4 Alternative 4 - No Federal WS FSDM

Under this alternative, WS would have no impact on feral swine populations in the State. As previously discussed, private efforts to reduce or prevent feral swine damage and perceived disease transmission risks could increase which could result in similar or even greater impacts on those populations than the current program alternative. As described in Section 4.1.1.2, it is hypothetically possible that frustration caused by the inability to reduce losses could lead to illegal use of chemicals by landowners which could lead to real but unknown impacts on target, as well as nontarget, species populations.

4.1.2 Effects on Nontarget Species Populations, Including T&E Species

4.1.2.1 Alternative 1 - Continue the Current Federal Feral Swine Damage Management Program (The Proposed Action)

Adverse Impacts on Nontarget (non-T&E) Species. While every precaution is taken to safeguard against taking nontarget species, at times changes in behavioral patterns and other unanticipated events can result in the incidental take of unintended species. These occurrences are rare and should not affect the overall populations of any species under the current program. Most methods utilized for FSDM are highly selective. Methods such as traps designed for feral swine often allow non-targets to be released unharmed. From October 1992 through September 2004, a total of 28 non-target animal species were captured by FSDM methods in Oklahoma. Of these, 10 raccoons, 2 white-tailed deer, 1 striped skunk, 1 feral dog and 1 coyote were killed and 6 wild turkeys, 4 white-tailed deer, 2 raccoons, and 1 feral dog were released unharmed. Considering that 1,598 feral swine were taken in the same time, non-target take accounted for 1.7% of the total take and less than 1% of the nontargets died.

Beneficial Impacts on Nontarget Species. Control operations as proposed in this alternative could reduce competition between native wildlife species and feral swine. As discussed in section 2.2.2, some nontarget species may actually benefit from FSDM. For example, ground nesting bird species would benefit from any reduction in feral swine because nest destruction and predation would be reduced. Other species such as white-tailed deer would benefit because more browse would be available.

T&E Species Impacts. T&E species that are federally listed (or proposed for listing) in Oklahoma are listed in Table 1. WS FSDM methods will have no effect on any of the listed species. On the other hand, since feral swine are omnivorous and environmentally destructive, a positive effect could occur on these species following FSDM in areas where feral swine may disturb or actually feed upon them.

The 1992 Biological Opinion from the USFWS concluded that the interior least tern and piping plover would not be adversely affected by any aspect of the WS program (USDA 1997, Appendix F). In 1999, Oklahoma WS entered into an informal consultation with the USFWS to address additional T&E species in Oklahoma that were not included in the original 1992 B.O. At that time a Biological Assessment was prepared to evaluate potential impacts to the following T&E or proposed species: red-cockaded woodpecker, Arkansas river shiner, American burying beetle, and the scaleshell mussel. The USFWS concurred with the WS determination that the current program is "...not likely to adversely affect any of the listed or proposed species."

4.1.2.2 Alternative 2 - Nonlethal FSDM Only By WS

Under this alternative, WS take of nontarget animals would probably be less than that of the proposed action because no lethal FSDM would be conducted by WS. However, nontarget take would not differ substantially from the

current program because the current program takes very few nontarget animals. On the other hand, parties whose feral swine damage problems were not effectively resolved by nonlethal control methods would likely resort to other means of lethal control such as use of shooting by private persons or potentially the illegal use of chemical toxicants as discussed in Section 4.1.1.2. This could result in less experienced persons implementing control methods and could lead to greater take of nontarget wildlife than the proposed action. It is hypothetically possible that frustration caused by the inability to reduce losses could lead to illegal use of chemical toxicants which could lead to unknown impacts on local nontarget species populations, including T&E species.

4.1.2.3 Alternative 3 - Technical Assistance Only

Alternative 3 would not allow any WS direct operational FSDM in the area. There would be no impact on nontarget or T&E species by WS activities from this alternative. Technical assistance or self-help information would be provided at the request of producers and others. Although technical support might lead to more selective use of control methods by private parties than that which might occur under Alternative 4, private efforts to reduce or prevent depredations could still result in less experienced persons implementing control methods leading to greater take of nontarget wildlife than under the proposed action. It is hypothetically possible that, similar to but probably less than under Alternative 2, frustration caused by the inability to reduce losses could lead to illegal use of chemical toxicants which could lead to unknown impacts on local nontarget species populations, including some T&E species.

4.1.2.4 Alternative 4 - No Federal WS FSDM

Alternative 4 would not allow any WS FSDM in the State. Nontarget take should not differ substantially from the current program because the current program takes very few nontarget animals. However, parties with feral swine damage problems would likely resort to other means of control such as use of shooting by private persons or even illegal use of chemical toxicants. There would be no impact on nontarget or T&E species by WS FSDM activities from this alternative. However, private efforts to reduce or prevent depredations could increase which could result in less experienced persons implementing control methods and could lead to greater take of nontarget wildlife than under the proposed action. It is hypothetically possible that frustration caused by the inability to reduce losses could lead to illegal use of chemical toxicants which could impact local nontarget species populations, including some T&E species.

4.1.3 Effects on Human Health and Safety

4.1.3.1 Alternative 1 - Continue the Current Federal Feral Swine Damage Management Program (The Proposed Action)

FSDM methods that might raise safety concerns include shooting with firearms and the use of aircraft for aerial hunting. Firearms are only used by WS personnel who are experienced in handling and using them. WS personnel receive safety training on an annual basis to keep them aware of safety concerns. The OK WS program has had no accidents involving the use of firearms or aircraft in which a member of the public was harmed. A formal risk assessment of WS's operational management methods found that risks to human safety were low (USDA 1997, Appendix P). Therefore, no significant impact on human safety from WS's use of these methods is expected.

4.1.3.2 Alternative 2 - Nonlethal FSDM Only By WS

Under this alternative, risks to human safety from WS's use of firearms on the ground or from aircraft would not occur. However, increased use of firearms by less experienced and trained private individuals would probably occur without WS assistance. Therefore, risks to human safety would probably increase under this alternative. Additionally, as discussed in Section 4.1.1.2, the illegal use of toxicants could lead to hazards to people.

4.1.3.3 Alternative 3 - Technical Assistance Only

Under this alternative, risks to human safety from WS's use of firearms and/or aircraft would not occur. Increased use of firearms by less experienced and trained private individuals would probably occur without WS direct operational assistance which would likely increase human safety risks, Similar to Alternative 2. Also, as under Alternative 2, people frustrated from a lack of an organized control effort could resort to the illegal use of methods that could have an effect on human safety.

4.1.3.4 Alternative 4 - No Federal WS FSDM

Under this alternative, risks to human safety from WS's use of firearms and/or aircraft would be less than the current program alternative, however OK WS's current FSDM program has an excellent safety record in which no accidents involving the use of these methods have occurred that have resulted in a member of the public being harmed. The elimination of shooting by WS could increase use of firearms by less experienced and trained private individuals under this alternative, which would likely increase human safety risks somewhat. Additionally, the illegal use of methods such as illegal toxicants would be highest under this Alternative and could impact human safety. However, this Alternative would likely result in similar effects as Alternatives 2 and 3.

4.1.4 Humaneness and Animal Welfare Concerns of Methods Used by WS

4.1.4.1 Alternative 1 - Continue the Current Federal Feral Swine Damage Management Program (The Proposed Action)

Under this alternative, methods viewed by some persons as inhumane would be employed. Despite standard operating procedures designed to maximize humaneness as described in section 2.2.4, the perceived stress and trauma associated with being held in traps or snares until the WS biologist or specialist arrives at the trap or snare site to dispatch the animal, or, as in the case of an unharmed nontarget, to release it, is unacceptable to some persons.

OK WS personnel are experienced, trained and professional in their use of management methods, in order to be as humane as possible under the constraints of current technology, workforce and funding.

4.1.4.2 Alternative 2 - Nonlethal FSDM Only By WS

The amount of suffering by target and nontarget wildlife under this alternative would likely be less than under the proposed action since lethal control activity by WS would not be allowed. However, use of traps and shooting by private individuals would probably increase if depredation was not satisfactorily reduced. This could result in less experienced persons implementing use of traps and snares without modifications which are used to exclude smaller nontarget animals. Increased take and suffering of nontarget wildlife could result. It is hypothetically possible that frustration caused by the inability to reduce losses could lead to illegal use of chemical toxicants which could lead to animal suffering.

4.1.4.3 Alternative 3 - Technical Assistance Only

Under this alternative, methods viewed by some persons as inhumane would not be employed by WS, but would likely be employed by private individuals. Use of traps and shooting by private individuals would probably increase. This could result in less experienced persons implementing use of traps and snares without modifications which are used to exclude smaller nontarget animals. Greater take and suffering of nontarget wildlife could result. It is hypothetically possible that frustration caused by the inability to reduce losses could lead to illegal use of chemical toxicants which might result in increased animal suffering.

4.1.4.4 Alternative 4 - No Federal WS FSDM

Alternative 4 would not allow any WS FSDM in the State. Impacts regarding the issue of humaneness under this alternative would likely be similar to those under Alternative 3. Under this alternative, methods viewed by some persons

as inhumane would not be employed by WS, but would likely be employed by private individuals. Use of traps and shooting by private individuals would probably increase. This could result in less experienced persons implementing use of traps and snares without modifications which are used to exclude smaller nontarget animals. Greater take and suffering of nontarget wildlife could result. It is hypothetically possible that frustration caused by the inability to reduce losses could lead to illegal use of chemical toxicants which might result in increased animal suffering.

5.0 CHAPTER 5: List of Preparers and Persons Consulted

5.1 List of Preparers/Reviewers

Michael C. Marlow, Wildlife Biologist, USDA-APHIS-WS

Kevin R. Grant, Wildlife Biologist/ OK Assistant State Director, USDA-APHIS-WS

John E. Steuber, Wildlife Biologist/ OK State Director, USDA-APHIS-WS

Thomas C. Hall, Wildlife Biologist/Environmental Coordinator, USDA-APHIS-WS

Gary A. Littauer, Wildlife Biologist/Nat'l Environ. Coordinator, USDA-APHIS-WS

5.2 List of Persons Consulted

Dr. Leslie Cole, DVM, Oklahoma Department of Food, Forestry and Agriculture

Alan Peoples, Chief of Wildlife, Oklahoma Department of Wildlife Conservation

Bill Dinkines, Asst. Chief of Wildlife, Oklahoma Department of Wildlife Conservation

Jerry Brabander, Field Supervisor, U.S. Fish and Wildlife Service

Chris O'Meilia, Wildlife Biologist, U.S. Fish and Wildlife Service

Dr. Kristy Bradley, DVM, Oklahoma State Department of Health

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OKLAHOMA CHAPTER

2727 EAST 21ST STREET, SUITE 102 • TULSA, OKLAHOMA 74114 • (918) 585-1117 • FAX (918) 585-2383

July 6, 2005

Kevin Grant
Assistant State Director
USDA, APHIS, Wildlife Services
2800 N. Lincoln Blvd.
Oklahoma City, OK 73105

RECEIVED
JUL 11 2005
WILDLIFE SERVICES
OKLAHOMA CITY, OKLAHOMA

Dear Mr. Grant:

We have received and reviewed your Environmental Assessment for Feral Swine Damage Management (FSDM) by Wildlife Services (WS) in Oklahoma. Whereas eradication is an unrealistic goal, local scale population management using available methods is necessary to minimize degradation caused by feral swine.

We agree that the impacts of swine damage far exceed any possible impacts to threatened and endangered species within the state. Given the destructive potential of this exotic species to native habitats within Oklahoma, it is our consensus that FSDM Program should be continued as proposed in Oklahoma.

If you have any questions, please contact us at (918) 585-1117.

Sincerely,

Jay Pruett
Director of Conservation

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Public Policy

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OKLAHOMA FARM BUREAU

2501 N. STILES • OKLAHOMA CITY, OK 73105-3126 • 405-523-2300

RECEIVED

JUL 11 2005

WILDLIFE SERVICES
OKLAHOMA CITY, OKLAHOMA

Via Facsimile 405-525-5951

July 8, 2005

Mr. Kevin Grant, Assistant State Director
USDA, APHIS, Wildlife Services
2800 N. Lincoln Blvd.
Oklahoma City, OK 73105

Re: Oklahoma Farm Bureau Comments on the Pre-Decision Environmental Assessments for
Feral Swine and Predator Management in Oklahoma

Dear Mr. Grant,

On behalf of the more than 158,000 member families of the Oklahoma Farm Bureau (OFB), we thank you for the opportunity to comment on the Pre-Decision Environmental Assessments for Feral Swine and Predator Management in Oklahoma. OFB has long been supportive of the efforts of Wildlife Services (WS). Because of the way wildlife is legally managed in Oklahoma, WS provides a much needed service to the agricultural producers in Oklahoma.

OFB strongly supports the proposed action to continue the current portion of the WS program that responds to requests for Feral Swine Damage Management and which is preparing for increased conflicts with feral swine, as well as the proposed action to continue the current WS Predator Damage Management activities in the State for the protection of livestock, crops, property, natural resources, and human health and safety.

OFB is a grassroots organization which derives its policies from its members across the state. Every county has an organized county Farm Bureau. Resolutions, also known as policy statements, originate at the county Farm Bureau level, then are adopted by the membership at a statewide meeting in November. Policies are subject to change annually.

The OFB Policy Book for 2005 has specific policy regarding Predator/Depredation Management at 290.5 as follows:

In order to continue control of predators or varmints, we recommend farmers and ranchers be allowed to control them on their land by the most effective and economical methods.

We urge the U.S. Fish and Wildlife Department to continue to support predator control and limit any restrictive rule that affects the ability of the fieldmen to do

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their work in predatory control.

The Oklahoma Department of Wildlife (ODWC), U.S. Fish and Wildlife Service, and any other public or private entity should not release any dangerous predators. They should capture and remove the ones already released. We support fines to anyone who knowingly releases predatory animals.

As the Fish and Wildlife Department has placed wildlife in certain areas of our state and as these animals are damaging valuable cash crops, we recommend that the same department be required to remove some of these animals, without charging the landowners and endangering domestic livestock.

Beavers and Prairie Dogs—We encourage the State Board of Agriculture to control the beaver and prairie dog populations.

Depredation Program—We support an animal damage depredation program financed by ODWC to reimburse farmers for losses caused by ODWC regulated wildlife.

Feral Hogs—We recommend the dumping of wild hogs for sportsmen for later hunting be punishable by stiff fines.

We recommend vigorous control of feral hogs already in the state.

Geese Depredation—We support assessing damage from geese depredation and urge Farm Bureau to pursue a remedy for this problem.

Recently, communications from OFB members indicate that feral hogs have spread across the state. In the past, they were thought to be isolated to only certain counties. As was mentioned in the Assessment, there are also increasing incidents of feral hog-automobile collisions. There is no reason to believe these collisions are less costly or dangerous than deer-automobile collisions. Because hogs are so low to the ground, they can go under a vehicle, doing a lot of damage to the undercarriage and/or axles.

A few years ago, the Oklahoma Farm Bureau Mutual Insurance Company began tracking deer-automobile collisions to get a better understanding of the cost to human health, property loss, and to the company's policyholders. Deer numbers are managed by the ODWC through the use of hunting seasons. Concerns about increasing deer numbers and their impact on crop depredation and deer-auto collisions prompted OFB members to reverse their objections to a longer deer gun season (overriding their concerns about hunting without permission and trespass issues) to adopt the current OFB policy at 290.3: *"We recommend that an unlimited number of deer, either sex, be taken until the deer population is under control. We support efforts to increase the number of deer harvested annually."*

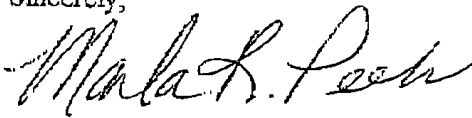
As was documented in the Assessments, predators and feral hogs cause tangible economic damage to agricultural producers. Due to the legal oversight of these wildlife by state and federal agencies, it is imperative that these agencies manage the wildlife, just as agricultural producers must manage their land to keep it healthy and productive. The activities of WS are a crucial part

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of this management. On behalf of the thousands of Oklahoma farmers and ranchers affected by predator wildlife and feral hogs, we urge you to continue the important work performed by WS.

Thank you for your consideration in this matter.

Sincerely,



Marla R. Peek
Director of Regulatory Affairs

cc: Senator Jim Inhofe
Senator Tom Coburn
Congressman John Sullivan
Congressman Dan Boren
Congressman Frank Lucas
Congressman Tom Cole
Congressman Ernest Istook
OFB State Board of Directors
County Farm Bureaus